UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|---|---|---|---|
| 10/573,868 | 03/29/2006 | Tomoko Asakawa | 074129-0541 | 7047 |

22428 7590 07/07/2011

FOLEY AND LARDNER LLP
SUITE 500
3000 K STREET NW
WASHINGTON, DC 20007

| EXAMINER | |
|---|---|
| SUTTON, DARRYL C | |

| ART UNIT | PAPER NUMBER |
|---|---|
| 1612 | |

| MAIL DATE | DELIVERY MODE |
|---|---|
| 07/07/2011 | PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) |
|---|---|---|
| | 10/573,868 | ASAKAWA, TOMOKO |
| | Examiner | Art Unit |
| | DARRYL C. SUTTON | 1612 |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *27 May 2011*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *5,8-12 and 15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *5,8-12 and 15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

| Attachment(s) | |
|---|---|
| 1) ☐ Notice of References Cited (PTO-892) | 4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ . |
| 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) ☐ Notice of Informal Patent Application |
| 3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____. | 6) ☐ Other: _____. |

## DETAILED ACTION

This Office Action is in response to the amendment filed 05/27/2011. No new claims have been added.

Applicant's arguments filed 05/27/2011 have been fully considered. Rejections and/or objections not reiterated from previous Office Actions are hereby withdrawn. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set of rejections and/or objections presently being applied to the instant application.

### *Claim Rejections - 35 USC § 103*

Claims 5 and 8-12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Ahern et al. (Eur. J. Pharmacol. 2000) in view of MacDonald et al. (Diabetes, 2002) and Nauck et al. (Diabetes Care, 1998).

Applicant argues that cited prior art does not teach all steps in the claimed invention or teach how the dipeptidyl peptidase IV inhibitor is used. In fact none of the references disclose testing if a mammal can no longer close an ATP-sensitive K+ channel due to stimulation by a sulfonylurea receptor 1- binding compound, nor do they suggest administering to said mammal an effective amount of a dipeptidyl peptidase IV inhibitor. While Nauck discusses sulfonylurea secondary failure, it notes that "this

purely clinical classification may appear a little imprecise, but no clearer criteria are available at the present," and "it does not make a direct comparison between GLP-1 effect between normal versus type 2 diabetes patients or between different stages of type 2 diabetes. Therefore, the step of "testing if said mammal can no longer close an ATP-sensitive K+ channel due to stimulation by a sulfonylurea receptor 1-binding compound" is not included in the prior art.

The Examiner disagrees.

Since this is a 103 obviousness rejection, no one piece of art is required to teach each and every limitation of the claims. Ahern et al. clearly disclose that DPP-IV is responsible for degradation of GLP-1 and that inhibitors increase GLP-1 levels and stimulated insulin secretion. Nauck et al. clearly disclose that GLP-1 stimulated insulin secretion in patients at the point of sulfonylurea secondary failure and that a similar threshold for GLP-1 induced insulin secretion is still active in patients with true secondary sulfonylurea failure. Accordingly, the skilled artisan would expect the effect of DDP-IV inhibitor compounds on GLP-1 induced insulin secretion to be the same in patients with secondary sulfonylurea failure or at least to have a reasonable expectation that it would. MacDonald clearly discloses that GLP-1 enhances insulin secretion through mechanisms involving inhibition, of ATP-sensitive K+ channels and inducing expansion of insulin secreting β-cells; and defines sulfonylurea secondary failure as the decrease in the ability of sulfonylurea compounds to stimulate insulin secretion via ATP sensitive K+ channels over time. The skilled artisan would reasonably make a correlation between the prevention of the inhibition of ATP sensitive K+ channels with

sulfonylurea secondary failure and with a decrease in insulin secretion. Therefore, when treating a patient who does not respond to sulfonylurea compounds, it would be obvious to test to see if the patient can no longer close ATP sensitive K+ channels to determine if the patient is suffering from sulfonylurea secondary failure. Further, since GLP-1 is known to inhibit ATP sensitive K+ channels it would be obvious to administer compounds which are known to increase GLP-1 levels or which prevent degradation of GLP-1 such as the DPP-IV inhibiting compounds of Ahern with a reasonable expectation that the GLP-1 threshold for insulin secretion can be met and that inhibition, i.e. closure, of the K+ channels by GLP-1 will result in insulin secretion.

Applicant argues that the advantages of the claimed invention would not naturally flow from the suggestions of Ahern, Nauck and/or MacDonald because the use of a DPP-IV inhibitor yields unexpected results, i.e. lower side effects as compared to GLP-1 analogue.

The Examiner disagrees.

Applicant has not provided support for the allegation of unexpected results and has not compared the instant invention against the closet prior art, which would be Ahern et al. which discloses DPP-IV inhibitors and not GLP-1 analogues. Ahern et al. discloses the use of DPP-IV inhibitors to treat patients with diet-controlled type 2 diabetes and adverse events produced by the DPP-IV inhibitor were disclosed, see page 874. Accordingly, the side effects caused by the DPP-IV inhibitor would be apparent to the skilled artisan.

Claim 15 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Ahern et al., MacDonald et al., and Nauck et al. as applied to claims 5 and 8-12 above, and further in view of Deacon et al. (Expert Opin. Investig. Drugs, 2004).

Applicant argues that Deacon does not cure the deficiencies of Ahern, MacDonald and Nauck.

The Examiner disagrees.

The Examiner's response to Applicant's arguments concerning Ahern et al., MacDonald et al. and Nauck et al. are provided *supra*. Accordingly, Deacon et al. is only required to provide motivation for combining with the prior art references. Since Deacon et al. disclose that MK-0431, the compound of instant claim 15, is a DPP-IV inhibitor, it provides adequate motivation for combining with Ahern et al., MacDonald et al. and Nauck et al.

No claims are allowed.

## ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darryl C. Sutton whose telephone number is (571)270-3286. The examiner can normally be reached on M-Th from 7:30AM to 5:00PM EST or on Fr from 7:30AM to 4:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frederick Krass, can be reached at (571)272-0580. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

/Darryl C Sutton/
Examiner, Art Unit 1612

/Frederick Krass/
Supervisory Patent Examiner, Art Unit 1612